DOCUMENT RESUME

ED 428 887 PS 027 471

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TITLE Collaborative Course Development in Early Childhood Special Education through Distance Learning.
PUB DATE 1999-00-00
NOTE 22p.; Contained in PS 027 470.
PUB TYPE Journal Articles (080) -- Reports - Descriptive (141)
JOURNAL CIT Early Childhood Research & Practice; v1 n1 Spr 1999
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Case Studies; *Course Content; *Distance Education; *Early Childhood Education; Educational Technology; Higher Education; Internet; Program Design; *Special Education; *Teacher Education; Teacher Education Programs; Training
IDENTIFIERS *Course Development; Wisconsin

ABSTRACT

Although the creation of new models of higher education is revolutionizing the way colleges compete for students, distance education has a long history, with correspondence courses as the earliest examples. Presently, distance learning through multimedia technology and the Internet is the newest solution for delivering instruction to personnel who are unable to travel to on-campus training sites. This article describes the current status of distance education methods for personnel preparation programs in early childhood special education (ECSE). A case study illustrates key design issues and presents the process and resources that assisted in development of a course in Wisconsin. Topics discussed in the case study include course development and content; the course delivery and design process; and the environment, instructional team, format and strategies, support, and evaluation. The article includes a glossary of terms in distance education, information on other ECSE distance education programs, and a list of online resources. Contains 29 references. (Author/EV)

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Volume 1, Number 1

Collaborative Course Development in Early Childhood Special Education through Distance Learning

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Abstract

Technology is rapidly expanding and changing higher education in multifaceted ways. Although the creation of new models of higher education is revolutionizing the way colleges compete for students, distance education has a long history, with correspondence courses as the earliest examples. Presently, distance learning through multimedia technology and the Internet is the newest solution for delivering instruction to personnel who are unable to travel to on-campus training sites. This article describes the current status of distance education methods for personnel preparation programs in early childhood special education (ECSE). A case study illustrates key design issues and presents the process and resources that assisted in development of a course in Wisconsin. Topics discussed in the case study include course development and content; the course delivery and design process; and the environment, instructional team, format and strategies, support, and evaluation. The article includes a glossary of terms in distance education, information on other ECSE distance education programs, and a list of online resources.

PS 027471

Introduction

Recent articles in the *Chronicle of Higher Education* document the transformation of higher education as it embraces the electronic world of the virtual university, virtual campus, virtual classroom, and virtual library (Blumenstyk, 1998; Young, 1998). Rapid technological growth brings changes because "the traditional world of higher education must either embrace this new virtual world or become less relevant in the value it adds to society" (Van Dusen, 1997, p. 2). Experts suggest that the last 27 months have seen more changes in technology than the last 97 years (Brown, 1997), and analysts predict that the rate of change in technology cycles will continue to increase (Brown, 1997). Institutions of higher education are becoming aware that to remain competitive, they

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must respond to and adopt advanced techniques more rapidly than in the past. Teaching, learning, and doing business through various technologies are likely "to change the structure of our traditional institutions and profoundly impact everyone, but their effects will be more greatly felt by those who are directly involved in the education profession" (Saba, 1998, p. 5).

Although the creation of new models of higher education is revolutionizing the way colleges compete for students, distance education has a long history; it is more than 100 years old (Moore & Kearsley, 1996). For example, correspondence study [definition] is considered the first generation of distance education courses in academia. The first programs were established in the late 1800s (Moore & Kearsley, 1996; Verduin & Clark, 1991); in addition, instructional audio (originating at the University of Wisconsin in 1919) and instructional television (originating at the University of Iowa in the 1930s) brought new media to higher education (Chamberlain, 1980; Verduin & Clark, 1991). Presently, distance learning through multimedia technology and the Internet is the newest solution for delivering instruction to personnel who are unable to travel to on-campus training sites. Most notably, Western Governors' University, which links 17 western states and territories, and Florida Gulf Coast University, which links 15 southern states, are university consortia that deliver programs and degrees electronically (Blumenstyk, 1998; Shoun, 1998).

In early childhood special education (ECSE), distance learning programs grew more from the need to prepare personnel in rural and remote regions than from the need to stay competitive through technology (Hughes & Forest, 1997; Ludlow, 1994; Rule & Stowitschek, 1991; Starlings, Wheeler, & Porterfield, 1992). Hughes and Forest (1997) found that 14 ECSE programs used distance learning methods. This information was gathered in 1995 by calling the early intervention coordinators in all states and reviewing national directories for information on distance learning initiatives (Hughes & Forest, 1997). Distance education methods ranged from "low tech," as in the case of weekend on-campus study where students travel to the university, to "high tech" interactive video teleconferencing [definition]. In general, the primary media for delivery of courses were live telecourse [definition], interactive television [definition], compressed video [definition], and taped video, with some programs using audio conferencing [definition] and mail correspondence; none of the 14 programs reported using computer conferencing [definition] or the Internet (see Table 1 for definitions of terminology).

Table 2 shows the current status of ECSE programs using distance learning modes. The authors contacted the original 14 ECSE programs identified by Hughes and Forest (1997) and reviewed the status of their delivery systems. Three programs no longer offered a distance education course; two new programs were identified. Because programs and courses are dependent on several variables such as faculty, funding, and support, the information contained in Table 2 will likely become quickly outdated as new programs develop and existing programs change.

As Table 2 shows, compared to the results of Hughes and Forest (1997), computer-based methods increased substantially—which is not surprising given the rapid growth in the use of the Internet and Web-based technology between 1995 and the present. Additionally, faculty use a variety of distance education modalities.

Other trends include the movement toward interdisciplinary collaboration and multiple-site participation. Most of the distance education courses found in Table 2 are taught by ECSE faculty for personnel in ECSE. Two exceptions are the cross-disciplinary master's of education program at the University of Minnesota–Duluth and a service coordination course at the University of Wisconsin–Madison, both of which are interdisciplinary in their faculty and student populations. While most courses originate from a single campus and are available to various sites, a unique collaboration exists between the University of Iowa, Iowa State University, and Northern Iowa University, which offer a collaborative ECSE master's degree, with courses originating from different campuses on a rotating schedule.

This article describes a unique statewide collaborative effort to deliver an ECSE course through a combination of traditional and distance education strategies. The process and the resources that assisted in planning this effort will be presented.

Capitalizing on Faculty Expertise through Distance Education: A Case Study in Statewide Collaboration

In Wisconsin, ECSE focuses on children ages birth to 8 with special needs and their families. Presently, eight institutions of higher education have faculty who provide undergraduate and graduate training to students seeking ECSE certification, including six University of Wisconsin (UW) campuses at Eau Claire, Oshkosh, Madison, Milwaukee, Stevens Point, and Whitewater, and two private colleges, Edgewood College and Silver Lake College. On each campus, there is typically one faculty member responsible for training and program development. With support (e.g., travel costs, compressed video [definition] costs) from the ECSE consultant at the Wisconsin Department of Public Instruction, faculty periodically meet to learn about new state initiatives and to discuss various personnel preparation issues. Two years ago, faculty identified the need for a collaborative course that would capitalize on the collective expertise of all ECSE faculty in Wisconsin, with the idea that distance education technologies might be the way to deliver such a course.

Course Development and Content

Several key factors contributed to the faculty's commitment to this endeavor. First, the interpersonal relationships among the ECSE faculty are strong. Faculty members know each other from various statewide work groups, and four of the eight faculty have served as president of the Wisconsin Division for Early Childhood, an active state professional organization. The Wisconsin Department of Public Instruction supports further faculty networking by facilitating meetings on important state initiatives. For example, faculty attended a meeting to learn about the new definition of "significant developmental delay" as an eligibility category. While faculty have retired or moved, and new faculty have joined the group, the relationships and group dynamics have been positive and collaborative over the 25 years that ECSE has existed in the state (Jenny Lange, personal communication, June 30, 1998).

A second key factor in establishing faculty commitment to this endeavor is funding. Given the research, teaching, and service activities already undertaken by faculty, the "nice idea" could not become a reality without some support for the extra effort. A small grant from the Wisconsin Comprehensive System of Personnel Development (CSPD)

discretionary funds supported initial planning (e.g., travel to meetings, conference calls, compressed video conferences), which encouraged the faculty to submit another grant to support course development. In 1998, the University of Wisconsin system funded an Undergraduate Teaching Improvement Grant to support the six University of Wisconsin campuses. This systemwide competition required proposals in which each campus had to provide matching funds for faculty release time; in addition to department approval, school/college and campus administration approvals were necessary to forward the application to the UW system.

In order to be inclusive of all ECSE faculty, the grant identified the faculty from private colleges (Edgewood College and Silver Lake College) as project consultants in developing and implementing the evaluation component of the grant. Thus, all ECSE faculty from the state's public and private institutions were included in the proposal. In addition to university faculty, the planning team included a parent of a child with a disability from the Wisconsin Personnel Development Project (responsible for Part C of the Individuals with Disabilities Education Act [IDEA, Public Law 105-17], amended in 1997 to address early intervention services, birth to age 3, for young children with disabilities and their families), as well as the Wisconsin Department of Public Instruction's early childhood special education consultant (responsible for Part B, Section 619, of IDEA, addressing preschool services for young children ages 3 to 6 with disabilities).

The goal of this cooperative endeavor was to develop an undergraduate/graduate course entitled *Current Issues and Practices in Early Childhood Special Education.* The focus was on increasing the quality of instruction to students and personnel throughout the state by utilizing the collective expertise of ECSE faculty. The target audience was preservice students, including undergraduate and initial certification students (students who have a degree in another field and who may or may not be seeking a master's degree). This course required students to attend one of the participating campuses for on-site instruction with a faculty member. On some campuses, faculty used existing courses; on other campuses, faculty established new or special courses. Enrollments varied from 2 to 28 students per campus (98 students total).

There were four objectives related to this course: (1) to develop a core curriculum and set of competencies to be acquired by all students, including undergraduate students, educators, related services personnel, paraprofessionals, parents, child care personnel, and program administrators; (b) to work collaboratively in defining what topics and activities would be prepared by which faculty using what types of technologies for the modules; (c) to evaluate the students and faculty so that information is collected regarding satisfaction with the course content, delivery (including technologies), and collaborative structure, as well as the traditional documentation of student learning outcomes; and (d) to integrate the new course content into the existing curriculum on each campus.

The first step in the course development process was to identify the core topical areas. The course outline addressed the following topics: (a) legislation and policy; (b) eligibility, identification, and assessment; (c) Individualized Family Service Plans (IFSPs) and Individual Education Plans (IEPs); (d) recommended practices and curricula; (e) medical and technological advances in intervention; and (f) research techniques and the efficacy of instruction. The next step was to determine the faculty

teams responsible for each topic. The faculty teams then created modules in which the course readings, activities, and assignments were developed (to see examples visit http://www.uwm.edu/web.uwm/ and find Exceptional Education 360-589).

Course Delivery and Design Process

Not only were the course contents new—the course delivery methods were, as well. The design and development of a distance education course depends on the nature of the course, its learners, the environment, the instructional team, instructional format and strategies or activities, support, and evaluation. The statewide scope of this course included a variety of learners in rural and remote areas in the state; therefore, special attention was given to the needs, characteristics, and expectations of learners in those areas. For example, in early discussions, a faculty member recommended a field visit to a neonatal intensive care unit (NICU) as an assignment; however, another colleague informed her that students in some locations may be hundreds of miles away from an NICU. Similarly, faculty planned for students to conduct observations in local programs, and they extended the assignment with a "virtual classroom" visit to an urban public school. By linking all campus sites to the school through compressed video, all students observed a culturally and linguistically diverse classroom.

Environment

Faculty awareness of the multiple environments in which a distance education class takes place is a new dilemma that requires careful attention (Murphy, 1998). For example, this course used compressed video, electronic mail [definition], electronic discussion lists, threaded discussions, and the World Wide Web, and it used "Web Course in a Box" as the Web-based course management tool (http://www.madduck.com/).

In addition, electronic reserve [definition] provided the course readings for students across the state. Rather than providing the "hard copy" of books or articles at each campus library, the UW–Milwaukee campus collected the materials from faculty and provided its library with the readings for scanning into electronic reserve. After the library scanned the materials, the readings were available to all students and faculty throughout the state via the World Wide Web (access was restricted by user ID/password). In order to view the articles, students and faculty were provided Adobe Acrobat® as the reader; they then can view the articles and print them, if desired. Because of copyright laws, articles remained on the Web for only one semester.

The dual challenge for faculty lies in learning how to use technologies themselves while providing for student technical training and course content delivery (Murphy, 1998). For example, in a traditional course, the faculty member entertains questions during class. Teaching with compressed video and using the Web for instruction require different skills than the traditional classroom approaches (Lehman, 1997). The instructional design consultant provided information on new strategies for teaching via compressed video, World Wide Web, and face-to-face interaction. The faculty learned by doing various practice activities: developing their faculty home page, using the threaded discussion feature of Web Course in a Box on "How I spent my summer vacation," and presenting a mini module on compressed video, with practice using the document camera and computer applications such as PowerPoint®.

The faculty each brought different skill levels and expertise in using new delivery approaches. This dilemma was not readily solved, and team building and support became critical factors. Table 3 lists the World Wide Web resources that faculty used for information on distance education and online course development and instruction.

Faculty Participant Vignette

When we met initially to plan the collaborative course, I remember feeling overwhelmed. I believe that these feelings were linked to my inexperience with distance education and the related technology. We held several collaborative course development meetings. I felt overcome by terminology related to distance education delivery models.

> What the heck is asynchronous video?
>
> What is a threaded discussion?

Because I am a junior faculty member and "new" to this group of teacher trainers, I felt uncomfortable asking too many "dumb" questions. As I got to know members of the group across additional planning meetings, my comfort level increased. The more questions that I asked, the more aware I became of other group member's similar struggles. This for me has been the most valuable lesson from the experience in joint course development and delivery. In my mind, this has direct application to working with students in the use and application of technology. Students need to be provided with a learning environment that encourages inquiry and problem solving.

Instructional Team

Many of the challenges in team building that have been identified for early intervention service providers and families (Tuchman, 1996) also occur with faculty—all of whom, in this situation, were from the same discipline. Although the faculty members were highly informed about characteristics of effective teams and team dynamics, proximity was an additional complication. Faculty resided in different areas of the state. Team building means taking time to get to know each other and to develop trusting relationships among team players (Tuchman, 1996). In this case, a combination of methods, including electronic mail, phone calls, face-to-face meetings, and video conferencing [definition], promoted collaboration in establishing communication channels, determining the mutual goals for the design of the course, and sharing responsibilities for its implementation. This involvement allowed faculty to select appropriate teams and team-teaching models (Collins, 1997; Collins, Hemmeter, Schuster, & Stevens, 1996).

Format and Strategies

The overall course format consisted of the class meeting one night each week for 3 hours, with the first hour and 20 minutes linked via compressed video. During the

remaining time, each faculty member conducted activities at his or her own site. For this course, the faculty employed an instructional design consultant to assist with the selection of format and instructional strategies. The planning of each session involved collaborative decisions on the overall framework, scope and sequence of the course, course timeline, and program design. Each faculty member participated in designing two or three instructional modules, and each team decided on a leader for the module to coordinate its development.

The instructional designer was responsible for assisting with staff development activities and for providing information on the various technologies and their most effective use. For example, faculty members learned how to use Web Course in a Box through hands-on sessions. Because Web-based course activities were new to most faculty, demonstrations of how activities are integrated into the curriculum through the use of electronic mail, electronic reserve, and online discussion forums were useful. Faculty comfort with the technology increased when the demonstration included specific information on how these activities foster faculty-to-faculty, faculty-to-student, and student-to-student communication; facilitate students' construction of a knowledge base; and individualize learning to the students' needs (Conceição-Runlee & Daley, 1998).

Support

The instructional design consultant was one key source of support for this project. The consultant's participation occurred because of grant funding. The consultant's role in offering a combination of instruction in pedagogical methodology, hands-on training with instructional technology, course design and class preparation, and group support were invaluable to faculty development. Leadership was another source of support for the project. One faculty member assumed responsibility for the grant writing activities, and she coordinated the project. Another faculty member assumed responsibility for the instructional design consultant and technology initiatives. Finally, incentives for faculty supported the process. The level of effort to develop and deliver a distance education course far exceeded that for normal course development. In this case, the grant funding provided release time from one course and access to travel funds for meetings. Overall, comprehensive faculty development and support for instructors who teach at a distance are critical for the success of distance learning courses (Robbins, 1997).

Evaluation

The need for accountability and quality assurance appears frequently in discussions of distance education. In his article, "Is Distance Education Comparable to 'Traditional Education'?" Farhad Saba suggests that this comparison is not meaningful; rather, he suggests that "what is important is communication and construction of knowledge" (Saba, 1998, p. 5). The course described here used several means of evaluation to encourage change and to modify learning, roles, and the overall program. A student pretest–posttest evaluation documented content knowledge and technology skills. A faculty pretest–posttest identified changes in levels of technology skills, collaboration adeptness, and distance education teaching competency. An adaptation of Stephen Brookfield's (1990) Learning Journal provided feedback after each session for both students and instructors. This feedback was critical for monitoring the quality of instructional delivery and program effectiveness. Evaluation tools are available at the faculty Web site, and results will be posted when data collection and analysis are

completed (http://www.uwm.edu/Dept/early-childhood/Evaluation/eval.htm).

Conclusion

With the explosion of the World Wide Web and other multimedia tools, distance education is an increasingly popular instructional mode to reach preservice and inservice professionals who may lack access to more traditional forms of education. As colleges and universities face declining financial support, they are turning toward new markets for educational services. These two conditions have catapulted higher education into a new arena. Clearly, the old models of preservice instruction (e.g., lecture as the dominant form of teaching) and inservice instruction (e.g., the train-and-hope model of staff development) are changing (Brookfield, 1995; Halpern, 1994; Osterman & Kottkamp, 1993; Rowland, Rule, & Decker, 1996; Wagschal, 1998; Winton, McCollum, & Catlett, 1997; Wolfe, 1998; Wolfe & Snyder, 1997). The challenges for faculty are the simultaneous efforts to incorporate state-of-the-art curriculum, use recommended practices for adult learning, and select some combination of distance education tools that provides the best instructional delivery. Given the irrevocable emergence of this new technological era, the exciting opportunity for ECSE is that we have colleagues to help us.

Acknowledgments

This project was funded in part by a Wisconsin Department of Public Instruction discretionary grant and a University of Wisconsin system undergraduate teaching improvement grant.

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E C R P
Volume 1 Number 1
Spring 1999

Table 1. Definition of Terms for Distance Education Modalities.

Audio conferencing: Class conducted by telephone using public lines between two or more remote locations with live, audio transmission. Students and faculty interact at regularly scheduled times using special equipment consisting of a speaker and microphones.

CD-ROM (Compact Disk-Read Only Memory): An optical storage system for computers that only allows data to be read off the disk. New data cannot be stored, and the disk cannot be erased for reuse. The high-quality color images produced can be incorporated into an electronic presentation or computer-based instruction.

Chat rooms: Two or more people set a time to meet online and communicate with each other live, using the keyboard to send written messages.

Compressed video conferencing: A course method in which images are transmitted electronically to two or more interactive television sites.

Computer conferencing: Form of communication where two or more participants can communicate using a computer connected by networks or phone lines. Students and faculty can type information (asynchronously or in real time) and respond to assignments/tasks on the computer screens.

Correspondence study: Courses are packaged with reading materials and assignments. Instructional tools may include audiotapes and/or videotapes that cover specific topic areas.

Electronic mail (e-mail): Messages, usually text, sent from one person to another via computer are used in courses as a communication tool among faculty and students. In this system, messages are automatically passed from one computer user to another through computer networks.

Electronic reserve: Used in courses as a tool for remote access of class materials. With this system, students may view, print, or download course material such as lecture notes, exams, journal articles, and book chapters.

Listservs: Electronic mailing lists used to allow students to communicate with one another. Users send e-mail to one address, whereupon their message is copied and sent to all of the other subscribers to the mailing list.

Telecourses: Courses in video format that are delivered via television or videotape. Course can be delivered live or taped.

Videotape distribution: Courses offered on campus are videotaped and distributed to students. It is the students' responsibility to view videotapes and complete assignments, readings, and tasks.

Video teleconferencing (Interactive television): A course broadcast between two or more remote locations, with live, animated image transmission and display. Faculty and students can interact with each other with no delay.

Web conferencing (Chat rooms): A course system that allows two or more logged-in users to set up a typed, real-time, online conversation across the World Wide Web.

WWW: Courses are distributed on the World Wide Web in a retrieval system in which documents formatted in HyperText Markup Language (HTML) are linked via Hypertext Transfer Protocol (HTTP) to other documents, as well as audio, video, and graphics files. By using a Web browser and clicking on hot spots, students can connect across the Internet and access course materials.

Table 2. ECSE Distance Education Resources.

Programs/Courses	Contact Person(s)	Distance Education Modalities	Undergraduate/Gradu: Continuing Educatio
Collaborative ECSE Program Center for Persons with Disabilities **Utah State University**	Cyndi Rowland and Sarah Rule Logan, UT 84322-6800 Phone: (435) 797-3381 Fax: (435) 797-3944 Email: cyndi@cpd2.usu.edu Internet: http://www.cecsep.usu.edu/	Correspondence Interactive television Electronic mail Chat rooms Videotapes Electronic reserve CD-ROM	Undergraduate Graduate Certification
Department of Special Education **West Virginia University**	Barbara Ludlow Research & Office Park 955 Hartman Run Rd. Morgantown, WV 26505 Phone: (304) 293-3450 Fax: (314) 293-6834 Email: bludlow@wvu.edu	Live telecourse	Graduate
Special Education Program Department of Special Education **University of Alaska at Anchorage**	Jill Wheeler and Susan Ryan School of Education 3211 Providence Dr. Anchorage, AK 99508 Phone: (907) 786-4439 Fax: (907) 786-1749 Email: afnjw@uaa.alaska.edu	Telecourses Videotape distribution Summer campus study Audio conferencing	Graduate Continuing Education
Project Options Department of Special Education **University of Kentucky**	Jennifer Grisham-Brown 124a Taylor Education Bldg. Lexington, KY 40506 Phone: (606) 257-7909 Fax: (606) 257-1325	Live telecourse Compressed video conferencing Satellite	Graduate
Early Childhood Special Education Program **University of Maine at Farmington**	Merrill Hill and Phyllis Fischer College of Education Farmington, ME 04938 Phone: (207) 778-7000 Fax: (207) 778-7247 Email: pfischer@maine.maine.edu	Live telecourse	Undergraduate

Iowa Regents Universities ECSE Graduate Training **University of Northern Iowa Iowa State University University of Iowa Iowa Department of Education**	Donna Raschke University of Northern Iowa 153 SEC Cedar Falls, IA 50614 Phone: (319) 273-3258 Fax: (319) 273-6997 Email: donna.raschke@uni.edu	Interactive television	Graduate
Cross-Disciplinary Study of Children, Families and Community: Master of Education Program **University of Minnesota–Duluth**	Joan Karp Department of Education 120 Montague Hall Duluth, MN 55812 Phone: (218) 726-6538 Fax: (218) 726-7073 Email: jkarp@d.umn.edu Internet: http://www.d.umn.edu/~hcarlson/preparation/distanceeducation.html	Interactive television Electronic mail Chat rooms Web-based (TopClass, threaded discussions) Correspondence	Graduate
Rural Family Support Specialist Training Program Department of Psychology **The University of Montana**	Sue Forest PhP345 Missoula, MT 59812 Phone: (406) 243-5763 Fax: (406) 243-6366 Email: suef@selway.umt.edu	Audiotapes Correspondence WWW Electronic mail Listservs Chat rooms Web conferencing	Undergraduate/Graduate
College of Education and Human Development **University of North Dakota**	Peggy Shaeffer P.O. Box 7189 Grand Forks, ND 58202 Phone: (701) 777-3144 Fax: (701) 777-4393 Email: shaeffer@badlands.nodak.edu	Interactive television Electronic mail	Graduate
University Affiliated Program Research and Education Planning Center **University of Nevada**	Cathy Fischer College of Education/MS 278 Reno, NV 89557-0082 Phone: (702) 784-4921 Fax: (702) 784-4997 Email: cjf@unr.edu	Audio conferencing	Undergraduate

Pathways to Effective Service Coordination for Families of Infants and Toddlers Correspondence Course Waisman Center Early Intervention Program **University of Wisconsin at Madison-**	Linda Tuchman University of Wisconsin–Madison 1500 Highland Ave. Madison, WI 53705 Phone: (608) 263-6467 Fax: (608) 263-0529 Email: tuchman@waisman.wisc.edu Internet: http://www.waisman.wisc.edu/earlyint/cocourse.htm	Correspondence WWW	Undergraduate/Graduate
Collaborative Course in ECSE **University of Wisconsin– Eau Claire, Madison, Milwaukee, Oshkosh, Stevens Point, Whitewater; Edgewood College, Silver Lake College**	Patty Caro University of Wisconsin–Stevens Point School of Education Stevens Point, WI 54481 Phone: (715) 346-3248 Fax: (715) 346-4846 Email: pcaro@uwsp.edu Internet: http://www.uwm.edu/web.uwm/	Compressed video Web-based: Web Course in a Box Electronic mail Listservs Electronic reserve	Undergraduate/Graduate

Table 3. Online Resources.

Distance Education

General Distance Education Information
http://www.athena.edu/Links/Distance.html
http://www.cdlr.tamu.edu/

Distance Education Clearinghouse
http://www.uwex.edu/disted/

Lists of Distance Education Resources for the Study of Special Education
http://141.218.70.183/SPEDdistedwww/introdistedsped.html

Resources on Distance Education and the Use of Technology in Instruction
http://www.utmem.edu/disted/deresource.html

Annotated Distance Education Resources on the Web
http://www.aed.org/ndl/disted/disted.html

Distance and Alternative Education Resources
http://www.beaulib.dtx.net/study.html

University of Idaho Web Site's Short Guides for Distance Education
http://www.uidaho.edu/evo/distglan.html

The Wellspring: A Virtual Community of Distance Educators on the Web
http://wellspring.isinj.com/

American Association for Higher Education, Technology Projects
http://www.aahe.org/

World Conference of the International Council for Open and Distance Education
http://www.icde.org/

National Center on Education Statistics: Report on Distance Education
http://nces.ed.gov/pubs98/distance/index.html

Instructional Technology Resources
http://www.inform.umd.edu/TeachTech/itech.html

Web-Based Course Development Tools

CourseWeb
http://www.courseweb.org/

DiscoverWare
http://www.discoverware.com/

Lotus Learning Space
http://www.lotus.com/home.nsf/welcome/learnspace/

TopClass
http://www.wbtsystems.com/

Virtual-U
http://virtual-u.cs.sfu.ca/vuweb/

Web Course in a Box (WCB)
http://www.madduck.com/

WebCT
http://homebrew1.cs.ubc.ca/webct/

Other Resources for Web-Based Instruction and Conferencing

Instructional Management Systems
http://www.imsproject.org/

First Class
http://www.softarc.com/

Web Board
http://webboard.ora.com/

ClassPoint
http://www.wpine.com/

Videoconferencing for Learning
http://www.kn.pacbell.com/vidconf/

Commercial Web Conferencing Software
http://thinkofit.com/webconf/#commercial/

Free Web Conferencing Software
http://thinkofit.com/webconf/#freeware/

Web-Based Instruction Software
http://starbase.monmouth.edu/~cgrzesik/webased.html
http://vetter.cmsfac.uncwil.edu/~vetter/online-course-talk/software.html

Course Management Software Comparison Sites (Review and analysis of Web-based instruction software listed above.)

http://www.ctt.bc.ca/landonline/

http://www.umanitoba.ca/ip/tools/courseware/

http://node.on.ca/tfl/integrated/eye/

Selected Examples of Internet-Based Programs from Institutions of Higher Education

Virtual Universities: An Overview. Chronicle of Higher Education, Information Technology
http://chronicle.com/infotech/

Connecticut State University System: OnlineCSU
http://www.csu.ctstateu.edu/onlinecsu/

Florida Gulf Coast University
http://www.fgcu.edu/

Harvard University's Berkman Center for Internet and Society, Cyberschool
http://cyber.harvard.edu/metaschool.html

State University of New York: SUNY Learning
http://sln1.suny.edu/sln/

University of Southern California's Andreus Gerontology Center Graduate Program
http://www.usc.edu/go/AgeWorks/

University of Texas System: The University of Texas Telecampus
http://www.uol.com/telecampus/

Course Preparation Resources

Instructional Technology Resources
http://www.inform.umd.edu/TeachTech/itech.html

National Teaching and Learning Forum Home Page
http://www.ntlf.com/

World Lecture Hall
http://www.utexas.edu/world/lecture/

The Directory of Scholarly and Professional E-Conferences
http://n2h2.com/KOVACS/

The Education Resource List
http://www.findmail.com/listsaver/edresource/

Syllabus Web
http://www.syllabus.com/

Association for the Advancement of Computing in Education
http://www.aace.org/

Student Support Resources

TeacherNet: The Student Teacher Resource Page
http://www.infs.com/presenters/softlist.html

Online Educational Resources: Federal Government Educational Resources on the Internet
http://www.ed.gov/EdRes/EdFed/index.html
http://wellspring.isinj.com/

American Association for Higher Education, Technology Projects
http://www.aahe.org/

World Conference of the International Council for Open and Distance Education
http://www.icde.org/

National Center on Education Statistics: Report on Distance Education
http://nces.ed.gov/pubs98/distance/index.html

Instructional Technology Resources
http://www.inform.umd.edu/TeachTech/itech.html